

1. (Currently Amended) A computer readable media having instructions stored thereon that, when executed by a processor causes the processor to provide a network-accessible service using an integrated development environment, the instructions comprising:

an annotated source code, which is a programming language augmented with declarative meta-data that exposes program logic as a network-accessible service;

at least one deployed service component that provides the network-accessible service to a client; and

an enhanced compiler that analyzes the annotated source code, recognizes numerous types of meta-data annotations, and generates a mechanism, which can include one or more of: object files, software components and deployment descriptors, to facilitate the deployment of the at least one service component, wherein the enhanced compiler operates to automatically create, deploy and manage at least one security type using a specification provided by the annotated source code, wherein the at least one security type is applied to at least one of: request messages, callbacks, response messages, and requests and callbacks originating with an intermediate service in a chain;

wherein the annotated source code comprises a list of one or more roles, and the automatically created security type comprises role based security that is limited to the one or more roles;

wherein the annotated source code further comprises annotations that, when compiled by the enhanced compiler, automatically generates reliable messaging capabilities for the network-accessible service, and message interception and transformation capabilities for the network-accessible service;

wherein the reliable messaging capabilities provide guaranteed message delivery between a client and the network-accessible service, and the message interception and transformation capabilities provide for the application of at least one user defined pre and post processing method to messages.

2. (Previously Presented) The computer readable media according to claim 1, wherein:

the network-accessible service is a Web service.

3. (Previously Presented) The computer readable media according to claim 1, wherein:

the network-accessible service simultaneously manages multiple transactions, wherein each transaction can be a conversation of a request and/or a response from the client for the network-accessible service.

4. (Previously Presented) The computer readable media according to claim 3, wherein:

the network-accessible service manages multiple asynchronous transactions, wherein within each asynchronous transaction, the response may be temporally separated from the initiating request for the network-accessible service from the client.

5. (Currently Amended) The computer readable media according to claim 1, the instructions further comprising:

~~an~~the integrated development environment (IDE) facilitating a graphical interface-based design and deployment of the network-accessible service and providing an indicator to include or exclude interceptors as a debug breakpoint.

6. (Previously Presented) The computer readable media according to claim 1, wherein:

the annotated source code is object oriented programming language based.

7. (Previously Presented) The computer readable media system according to claim 1, wherein:

the meta-data can be either in-file with the annotated source code, or in a separate file, which can be a specially formatted XML file.

8. (Previously Presented) The computer readable media according to claim 1, wherein:

the annotated source code facilitates access to an external service, which can be one of stateful, stateless, synchronous, and asynchronous.

9. (Previously Presented) The computer readable media according to claim 1, wherein:

the annotated source code defines a wire binding between the network accessible service and a physical wire format and/or protocol.

10. (Previously Presented) The computer readable media according to claim 9, wherein:

the wire binding can be at least one of:

SOAP over HTTP or SMTP;

transport of XML via generic HTTP Post;

transport of XML over other protocols such as FTP and mail;

and transport of XML over messaging services such as JMS or MSMQ.

11. (Previously Presented) The computer readable media according to claim 2, wherein:

the at least one service component comprises a servlet container and an enterprise server-side managed component container, which are coupled together to deploy a Web service.

12. (Previously Presented) The computer readable media according to claim 11, wherein:

the servlet container comprises:

listening and responding to a service request from the client; and

identifying and queuing the service request to be buffered.

13. (Previously Presented) The computer readable media according to claim 11, wherein:

the enterprise server-side managed component container dispatches a service request based on meta-data to a stateless or stateful component.

14. (Cancelled).

15. (Previously Presented) The computer readable media according to claim 1, wherein:

the at least one security type is comprised of at least one of:
transport security for a data communications channel;
message based encryption security to protect headers and payloads in messages;
authentication of users or computing devices for channel or message based security;
digital signatures for verifying the originator of a message; and
user identity and declarative role-based security for granting or deny a client access to a particular service.

16. - 17. (Cancelled)

18. (Currently Amended) The computer readable media according to claim ~~47~~1, wherein:

the at least one processing method comprises at least one of:
interception and transformation of message headers and contents;
message logging and auditing;
message redirection; and
protocol conversion.

19. (Currently Amended) A computer-enabled method to provide a network-accessible service using an integrated development environment, comprising:

 exposing program logic as a network-accessible service using an annotated source code, which is a programming language augmented with declarative meta-data;
 providing the network-accessible service to a client via at least one deployed service component; and

 analyzing the annotated source code, recognizing numerous types of meta-data annotations, and generating a mechanism that comprises one or more of: object files, software components and deployment descriptors, to facilitate the deployment of the at least one service component;

 automatically creating, deploying and managing at least one security type using a specification provided by the annotated source code, wherein the at least one security type is applied to at least one of:

 request messages, callbacks, response messages, and requests and callbacks originating with intermediate services in a chain;

 wherein the annotated source code comprises a list of one or more roles, and the automatically created security type comprises role based security that is limited to the one or more roles;

wherein the annotated source code further comprises annotations that, when compiled by the enhanced compiler, automatically generates reliable messaging capabilities for the network-accessible service, and message interception and transformation capabilities for the network-accessible service;

wherein the reliable messaging capabilities provide guaranteed message delivery between a client and the network-accessible service, and the message interception and transformation capabilities provide for the application of at least one user defined pre and post processing method to messages.

20. (Original) The method according to claim 19, wherein:
the network-accessible service is a Web service.

21. (Original) The method according to claim 19, further comprising:
simultaneously managing multiple transactions, wherein each transaction is a conversation of a request and/or a response from the client for the network-accessible service.

22. (Original) The method according to claim 21, further comprising:
managing multiple asynchronous transactions, wherein within each asynchronous transaction, the response may be temporally separated from the initiating request for the network-accessible service from the client.

23. (Original) The method according to claim 19, further comprising:
facilitating a graphical interface-based design and deployment of the network-accessible service.

24. (Previously Presented) The method according to claim 19, further comprising:
facilitating access to an external service that comprises at least one of stateful, stateless, synchronous, and asynchronous.

25. (Original) The method according to claim 19, further comprising:
defining a wire binding between the network-accessible service and a physical wire format and/or protocol.

26. (Original) The method according to claim 20, further comprising:
listening and responding to a Web service request from the client; and
identifying and queuing the Web service request to be buffered.

27. (Original) The method according to claim 20, further comprising:
dispatching a Web service request based on meta-data to a stateless or stateful component.

28. - 46. (Cancelled).

47. (Currently Amended) A machine readable medium having instructions stored thereon that when executed by a processor cause a computer-enabled system to function as an integrated development environment comprising:

expose program logic as a ~~network-accessible~~web service using an annotated source code, which is a programming language augmented with declarative meta-data;

provide the ~~network-accessible~~web service to a client via at least one deployed service component; and

analyze the annotated source code, recognizing numerous types of meta-data annotations, and generating a mechanism, which includes at least one of: object files, software components and deployment descriptors, to facilitate the deployment of the at least one service component;

automatically create an interceptor using a specification provided by the annotated source code, wherein the interceptor allows at least one user-defined pre or post processing method to be applied to a message from the client, wherein the interceptor is configured to transform message headers and content between the client and the deployed service component;

wherein the annotated source code comprises a list of one or more roles, and automatically creating security type comprising role based security that is limited to the one or more roles;

wherein the annotated source code further comprises annotations that, when compiled by the enhanced compiler, automatically generates reliable messaging capabilities for the web service, wherein the reliable messaging capabilities provide guaranteed message delivery between a client and the web service.